

REMARKS

The Office action mailed on October 3, 2002 has been carefully reviewed and the above identified amendments have been provided to thoroughly address each of the objections and rejections provided by the examiner in that Office action. In addition, the following remarks are submitted to clarify and explain the importance of the above amendments and to support a finding by the examiner that the claims, as amended, are now in a form warranting allowance of this case. Accordingly, the undersigned respectfully requests reconsideration by the examiner in this case.

At the outset, applicant notes that a preliminary amendment was submitted in this case by facsimile transmission on September 30, 2002. The above-identified Office action was mailed four days later and did not take into account this preliminary amendment. Applicant recognizes that the close timing of this preliminary amendment to the mailing date of the Office action made it difficult, if not impossible, for this preliminary amendment to have been considered by the examiner in this Office action and apologizes for any confusion which may have been generated in this case due to the late filing of this preliminary amendment.

Applicant respectfully requests that the preliminary amendment submitted by facsimile transmission on September 30, 2002 be entered in this case. For clarity, each of the amendments to the claims included in that preliminary amendment have been reiterated in this amendment, as indicated above. Hence, if it is preferable that this preliminary not be entered, the claims should still end up in the same form by entering the amendments included herein. Note with respect to claim 14 that some limitations added to claim 14 in the preliminary amendment have been removed from claim 14 in this response, with other limitations additionally added to claim 14.

Also, applicant notes that the preliminary amendment had canceled claims 21-28, in the expectation that the examiner would require restriction of the claims in this application to a single invention identified either by claims 1-20 or 21-28. Apparently

this restriction has not been made by the examiner. Hence, new claims have been added to this case which correspond with previously canceled claims 21-28. Should the examiner have questions about the form of the claims as now amended, the examiner is invited to contact the undersigned for any clarification.

Applicant notes from the most recent Office action (page 3, paragraph 5), that the examiner had found claims 4-9, 11, 15, 20 and 26-28 to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant has amended these claims in accordance with the examiner's instructions. Specifically, claim 4 has been amended to include the requirements of claims 1-3 and to be placed in independent form. Claims 6-9 have been slightly amended to depend more directly from claim 4. Care has been taken to ensure that proper antecedent basis has been maintained for these claims.

Claim 11 has been amended to include the requirements of claims 1, 2 and 10 and to be placed in independent form. Claim 15 has been amended to include the requirements of claim 14. Claim 20 has been amended to include the requirements of claims 14, 18 and 19.

Claims 26-28 have been canceled. However, new claims 29-31 have been provided which correspond with canceled claims 26-28, except that claim 29 is in independent form and includes requirements corresponding with the requirements of canceled claims 21, 23, 24, 25 and 26. Also, claim 31 depends directly from claim 29, while corresponding canceled claim 28 had depended from claim 26 through intervening claim 27. Accordingly, claims 4-9, 11, 15, 20 and 29-31 should now be in a form warranting allowable status.

The examiner had rejected claims 1-3, 10, 12-14, 16-19, 21 and 22 under 35 U.S.C. §102(e) as being anticipated by Reible. Also, the examiner had rejected claims 23-25 under 35 U.S.C. §103(a) as being made obvious by Reible. Applicant has carefully evaluated the teachings of Reible and compared them to the requirements of the claims

of this application and the features of the invention of this application. Applicant does not fully agree with the rejection of these claims based on the teachings of Reible. Nevertheless, these claims had each been amended to further emphasize and clarify the differences deemed by the applicant to make these claims neither anticipated nor made obvious by the teachings of Reible.

Specifically, applicant has amended independent claim 1 and independent claim 14 in a related fashion emphasizing the existence and affect of the back plug when removed, on the openness of the firing chamber of this invention. For instance, claim 1 has been amended to require "said second rear end adapted to be at least partially open to an exterior of the apparatus when said back plug is removed." Claim 14 as amended requires "said firing chamber adapted to be at least partially open to an exterior of the marker, other than through the barrel, when said back plug is removed."

The examiner cites Reible as disclosing a removable back plug 210. Reible does teach a "rear cap 210" (paragraph 0100). This rear cap 210 extends into a cavity 307 of the main body 207 (paragraph 0102). The cavity 307 is defined as a gas storage chamber 307 (paragraph 0115). The function of the gas storage chamber 307 is to hold and then deliver high pressure gas to the firing chamber, as shown in detail in the sequence of figures 11-14.

First, applicant respectfully submits that the end cap 210 is not a back plug at a rear end of the firing chamber, as required by amended claims 1 and 14. Rather, the end cap 210 is provided at one end of the gas storage chamber 307 which stores compressed gas away from the firing chamber before delivery of this compressed gas to the firing chamber forward of a gas diffuser 237. The gas storage chamber 307 is clearly separated from the firing chamber by the gas diffuser 237 and by the exhaust piston 506. Only when the exhaust piston 506 is briefly in a lowered position (figure 13) does any form of communication exist between the gas storage chamber 307 and the firing chamber forward of the gas diffuser 237.

Additionally, amended claims 1 and 14 require that the firing chamber be open to an exterior of the apparatus when the back plug is removed. Reible never teaches such openness. Rather, Reible only briefly teaches communication between the gas storage chamber 307 and the firing chamber forward of the gas diffuser 237 when the exhaust piston 506 is in a lowered position. This lowering of the exhaust piston 506 is taught to occur only for the brief instant when the pressurized gas within the gas storage chamber 307 is to be exhausted through the gas diffuser 237 into the firing chamber to eject the projectile from the barrel (paragraphs 0112 and 0113).

If the end cap 210 were removed from the gas storage chamber 307, this pressurized gas would blast out the end cap 210. The function of the end cap 210 is not called out by Reible. However, the only logical conclusion is that the end cap 210 allows access to the gas storage chamber 307 either for manufacture or maintenance of this gas storage chamber 307. Such activities would only occur when the exhaust piston 506 is in the upper position which is the at rest state for this exhaust piston 506. In such an orientation, no communication exists between the firing chamber forward of the gas diffuser 237 and the end cap 210, as required by amended claims 1 and 14. Hence, even if an improper interpretation of Reible were to consider the firing chamber forward of the gas diffuser 237 to be inclusive of the gas diffuser 237 and the pathway leading back to the gas storage chamber 307, such a hypothetical "firing chamber" would still not be open to an exterior of the apparatus because the end cap 210 would not be removed during firing, the only time that any such openness is provided.

This is not a trivial distinction lacking in real-world significance. Rather, when a paint ball marker such as that to which these claims are directed is in use, it is expected that a paint ball will occasionally rupture, requiring cleaning of the barrel and firing chamber. To thoroughly clean the barrel and firing chamber, it is desirable to pass a squeegee or cleaning swab entirely through the barrel and firing chamber from one end to another. The invention of this application makes such a cleaning procedure both

possible and simple (see figure 2).

In contrast, the Reible reference teaches a firing chamber which is not open to an exterior at a rear of the firing chamber, when the end cap 210 is removed. Not only is a tortuous pathway provided which would not be practical to pass a cleaning swab through, but the exhaust piston 506 would block such a cleaning procedure, if not already blocked by the gas diffuser 237. As discussed above, the exhaust piston 506 is only taught to be briefly lowered and at a time when the end cap 210 would always be in place. Hence, thorough and quick cleaning of the Reible device when a paint ball ruptures, cannot be achieved. Accordingly, claims 1 and 14 as amended are neither anticipated nor made obvious by the teachings of Reible, and should thus warrant allowable status. Accordingly, these claims also warrant allowable status.

Claims 2, 3, 10, 12, 13 and 16-19 depend from amended claims 1 or 14, either directly or through intervening claims, thus benefiting from the amendments made to claims 1 and 14.

In addition to new claims 29-31 discussed in detail above, new claims 32-38 have also been provided in a form which is believed to identify patentable subject matter. Specifically, new claim 32 corresponds with previous claim 21 with the addition that new claim 32 also requires that the closed end of the firing chamber have "a removable back plug adjacent thereto, causing said closed end to be closed, said closed end adapted to be at least partially open to an exterior of the firing chamber when said back plug is removed."

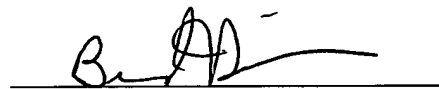
This additional requirement of new claim 32 in addition to what was previously required by claim 21 is similar to the additional back plug limitations provided in amended claims 1 and 14. Rather than belabor the record, applicant merely states that for the reasons provided above with respect to amended claims 1 and 14, new claim 32 is believed to warrant allowable status. New claims 33-36 are similar to previous claims 22-25 and depend from new claim 32, either directly or through intervening claims.

Accordingly, for the reasons provided above, new claims 33-36 should also be in a form warranting allowable status.

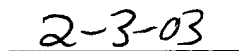
New claims 37 and 38 require additional details of the firing chamber and back plug arrangement, providing in still greater detail requirements not taught by Reible in any form. Accordingly, new claims 37 and 38 should also be in a form warranting allowable status.

In view of the foregoing, it is respectfully requested that the examiner pass this case to issue. If, upon consideration, the examiner believes further issues remain outstanding or new ones have been generated, the undersigned requests that the examiner call the undersigned to set up a personal or telephone interview with the undersigned to resolve any such remaining issues.

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Date

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 21-28 have been canceled.

Claims 1, 4, 6, 8, 9, 11, 14, 15 and 20 have been amended as follows:

Claim 1 (amended) - A paint ball loading and firing apparatus comprising in combination:

a source of compressed gas;

an elongate firing chamber having a barrel at a first end for release of a fired paint ball and a removable back plug at a second rear end opposite said first end, said second rear end adapted to be at least partially open to an exterior of the apparatus when said back plug is removed;

a paint ball loading hole in said firing chamber, said loading hole located between said back plug and said barrel; and

a selectively openable gas path between said source of compressed gas and said firing chamber.

Claim 4 (amended) - [The apparatus of Claim 3] A paint ball loading and firing apparatus comprising in combination:

a source of compressed gas;

an elongate firing chamber having a barrel at a first end for release of a fired paint ball and a removable back plug at a second end opposite said first end;

a paint ball loading hole in said firing chamber, said loading hole located between said back plug and said barrel;

a selectively openable gas path between said source of compressed gas and said firing chamber;

wherein a door is located adjacent said loading hole, said door having an open position with said loading hole exposed to allow a paint ball to pass into said firing

chamber and a closed position with said door blocking passage of paint balls into said firing chamber;

wherein said door is controlled so that said door is restricted to said closed position when said selectively openable gas path is opened and compressed gas enters said firing chamber; and

wherein said door slides between said open position and said closed position within a door slot, said door slot restricting said door to sliding motion between said open position and said closed position.

Claim 6 (amended) - The apparatus of [Claim 5] Claim 4 wherein said door has a base end most distant from said firing chamber and a tip opposite said base end, said door having a width between said rails which tapers toward said tip; and

wherein said door slot of said loading hole tapers to a lesser width at a side of said door slot most distant from said base end of said door.

Claim 8 (amended) - The apparatus of [Claim 7] Claim 6 wherein at least one spring is interposed between said base end of said door and a portion of a housing in fixed position relative to said firing chamber, said spring biasing said door toward said closed position.

Claim 9 (amended) - The apparatus of [Claim 8] Claim 7 wherein said door has a top surface opposite said under bevel with a concave depression therein, said concave depression increasing in depth as said concave depression extends toward said tip, a radius of curvature of said concave depression similar to a curvature of a paint ball.

Claim 11 (amended) - [The apparatus of Claim 10] A paint ball loading and firing apparatus comprising in combination:

a source of compressed gas;

an elongate firing chamber having a barrel at a first end for release of a fired paint ball and a removable back plug at a second end opposite said first end;

a paint ball loading hole in said firing chamber, said loading hole located between said back plug and said barrel;

a selectively openable gas path between said source of compressed gas and said firing chamber;

wherein a door is located adjacent said loading hole, said door having an open position with said loading hole exposed to allow a paint ball to pass into said firing chamber and a closed position with said door blocking passage of paint balls into said firing chamber;

wherein a trigger is provided which is manually toggleable by a user, said trigger configured to move a unity bracket controlling flow of compressed gas along said gas path and controlling movement of said door between said open position and said closed position; and

wherein said trigger manually adjusts flow of compressed air through a 3-way valve with compressed air flow from said 3-way valve controlling a position of a ram including a piston traveling within a cylindrical blind bore, said piston of said ram coupled to said unity bracket for control of a position of said door and gas flow along said gas path.

Claim 14 (amended) - A paint ball marker, comprising in combination:

a grip;

a trigger;

a compressed gas source;

a firing chamber, said firing chamber being hollow between a back plug and a barrel through which a paint ball is fired;

a gas path extending between said compressed gas source and an entrance into said firing chamber, said gas path including at least one valve thereon, said valve at least partially controlled by said trigger; [and]

a loading hole in said firing chamber forward of said back plug, said loading hole passing laterally into said firing chamber, said loading hole at least as large as a paint ball to be fired out of said firing chamber[.]; and

said firing chamber adapted to be at least partially open to an exterior of the marker, other than through the barrel, when said back plug is removed.

[a door adapted to move laterally relative to a center line of said firing chamber between a closed position adjacent said loading hole and an open position spaced from said loading hole.]

Claim 15 (amended) - [The marker of Claim 14] A paint ball marker, comprising in combination:

a grip;

a trigger;

a compressed gas source;

a firing chamber, said firing chamber being hollow between a back plug and a barrel through which a paint ball is fired;

a gas path extending between said compressed gas source and an entrance into said firing chamber, said gas path including at least one valve thereon, said valve at least partially controlled by said trigger;

a loading hole in said firing chamber forward of said back plug, said loading hole passing laterally into said firing chamber, said loading hole at least as large as a paint ball to be fired out of said firing chamber; and

wherein said valve in said gas path is an activator valve driven by a ram having a piston residing within a blind bore, said blind bore having air pathways on either side of said piston leading to a 3-way valve coupled to said trigger, with said trigger movable to move said ram piston and said activator valve.

Claim 20 (amended) - [The marker of Claim 19] A paint ball marker, comprising in combination:

a grip;

a trigger;

a compressed gas source;

a firing chamber, said firing chamber being hollow between a back plug and a barrel through which a paint ball is fired;

a gas path extending between said compressed gas source and an entrance into said firing chamber, said gas path including at least one valve thereon, said valve at least partially controlled by said trigger;

a loading hole in said firing chamber forward of said back plug, said loading hole passing laterally into said firing chamber, said loading hole at least as large as a paint ball to be fired out of said firing chamber;

wherein a door is located adjacent said loading hole, said door having an open position and a closed position;

wherein said marker includes a ram within a cylindrical blind bore having a piston slidably located therein, said piston controlled by compressed gas from said compressed gas source selectively supplied to said blind bore by movement of said trigger, said piston coupled to a rod which is arranged to control movement of said door between said open position and said closed position; and

wherein said door includes a beveled surface, said door located within a door slot formed in said firing chamber adjacent said loading hole, said door slot shaped and sized to accommodate sliding of said door between said open position and said closed position, a loading slide having a beveled end which resides within a slide slot non-parallel with said door slot and adjacent said door, said beveled end having a slope which co-acts with said beveled surface of said door when said beveled end of said

loading slide abuts said bevel led surface of said door to cause said door to move from said closed position to said open position, said loading slide coupled to a unity bracket, said unity bracket also coupled to said rod of said ram, such that said loading slide is caused to move when said rod is caused to move by said trigger.